

REMARKS

Claims 1-6 remain in the application including independent claim 1. Claim 7 has been withdrawn from consideration as being drawn to a non-elected invention. New dependent claims 8-14 have been added.

The drawings stand objected to for not including the reference number 10. Figure 1 has been amended to include the reference number 10, which was inadvertently numbered 14. A corrected sheet of drawings is attached hereto.

The examiner also objects to the drawings because it is not clear as to which component is the rotor casing, which component is the armature, and which component is the shaft. Figure 1 shows an electric motor armature 10. The electric motor armature 10 includes a cylindrical rotor casing 11 and circumferentially spaced straight wire bundles 12. Straight wire bundles 12 have end portions 13 that are connected by way of a circuit cap 14. Thus, the armature is 10 and the rotor casing is 11.

Claims 1-6 stand rejected under 35 U.S.C. 112, second paragraph. The examiner argues that it is not clear if the casing is part of the armature and also the location of the shaft is not clear. The specification clearly states that the armature 10 includes a rotor casing 11. See paragraph [11]. The claims do not include a limitation directed to a shaft. Applicant asserts that amendments to the claims are not necessary and that all 35 U.S.C. 112, second paragraph, rejections have been overcome.

Claims 1-4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al. in view of Umeki. Graham is directed to a unique ironless core armature for a DC motor having brushes. The armature has a conductive coil that is constructed from a pair of thin plates

10, 12, with each plate being cut into a pattern to produce a series of parallel conductive bands 18, 22, with each band being separated from the other by cutouts 14, 16.

Plate 10 is rolled into a cylinder 42 and plate 12 is rolled into a cylinder 44. Cylinder 42 is smaller than cylinder 44 so that cylinder 42 can be received within cylinder 44 in a telescoping relationship. Inner cylinder 42 is wrapped with layers of insulating material. The cylinder 42 is then inserted into cylinder 44. Then cylinder 44 is wrapped with layers of insulating material. The cylinders 42, 44 each include holes that are aligned with each other to provide solder flow paths to interconnect pads of each coil segment. The soldered joints electrically interconnect all outer cylinder 44 conductive bands with respective inner cylinder 42 conductive bands so as to form a continuous, inductive helical structure as shown in Figure 5. A commutator 50 collects current from the brushes and provides power to the helical coil circuit.

Claim 1 requires an electric motor armature that includes a cylindrical rotor casing, a plurality of circumferentially spaced wire bundles encased about the circumference of the rotor casing, and a circuit cap electrically connecting the wire bundles to each other. The examiner argues that Graham teaches an armature having “a cylindrical rotor casing 44, a plurality of spaced conducting bundles 18 and a circuit cap 50 electrically connecting the bundles 18 to each other.” Applicant disagrees.

First, component 44, as discussed above, is part of the conductive coil because component 44 is outer cylinder that is formed from conductive plate 12. Thus, component 44 cannot be the claimed rotor casing. Second, component 18 is not a plurality of wire bundles. Component 18 is one of a plurality of conductive bands that are that are used to form the outer cylinder 44 portion of the conductive coil. Third, the conductive bands 18 in Graham are clearly

not “encased” about the circumference of the rotor casing because there is no rotor casing in Graham. Fourth, the conductive bands 18 in Graham are not circumferentially spaced about the circumference of the rotor. The bands 18 are electrically connected to bands 22 on a second inner cylinder 42 to form a *continuous* helical structure (see Figure 5), thus all of the bands are connected to each other and are not spaced from each other. Thus, Graham does not disclose, suggest, or teach the features of claim 1.

The Umeki reference does not make up for the deficiencies of Graham. The examiner relies on Umeki solely for the teaching of bundles of wires that are used to attach to the rotor. However, there simply is no motivation to make this combination and even assuming sufficient motivation exists, as discussed above, the combination does not teach all of the features of claim 1.

It is impermissible to simply engage in a hindsight reconstruction of the claimed invention, using the Applicant’s structure as a template and selecting elements from the references to fill in the gaps. The references themselves must provide some teaching whereby Applicant’s combination would have been obvious. There is no teaching in either of the references cited by the examiner, which would motivate one of ordinary skill in the art to modify Graham using Umeki with the end result being Applicant’s invention.

Graham is directed to providing a unique coil structure for an ironless core armature that eliminates many of the problems associated with traditional wire wound conductors, col. 5, lines 51-52. “In comparison with a wire wound armature, the wire has a minimum bend radius at the cylinder ends that increase the armature wall thickness. Prior art armatures are therefore thicker at the ends whereas the armature in this invention is no thicker at the ends than anywhere else

along the armature wall.” Graham, col. 7, lines 43-49. Umeki specifically addresses problems relating to attaching a coil structure to an iron core armature. Thus, Umeki teaches away from the technology addressed in Graham. It is impermissible to modify a reference in a manner that destroys or defeats the benefits that were achieved by the invention set forth in the reference. To modify Graham to replace the unique ironless core and coil plate band structure with a wire structure and iron core armature, as taught by Umeki, would clearly destroy the benefits achieved by Graham. Thus, the rejection is not proper and must be withdrawn.

Further, none of the features of claims 2-4 are disclosed or taught by Graham or Umeki. Claim 2 requires the wire bundles to be straight and have end portions. The conductive plates 18, 22 in Graham are not straight. Figures 2 and 3 clearly show that these bands are initially U-shaped, with Figure 5 showing that the bands 18, 22 cooperate together to form a helical structure in the finished product. The coils 5a, 5b in Umeki are also not straight as Figure 1A clearly shows that the coils are bent at various different angles along their length. Further, the coils in Umeki do not have end portions, as the coils are formed as a continuous loop.

Claim 3 requires the circuit cap to connect the wire bundles to each other at the end portions. In Graham the conductive plates 18, 22 are connected to each other by solder joints. See col. 7, lines 28-30. Umeki also does not teach connection of wire bundles to each other with a circuit cap.

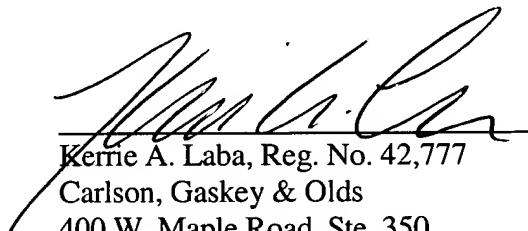
Claim 4 requires the rotor casing to define an axis where the straight wire bundles lie parallel to the axis. As discussed above, the bands 18, 22 in Graham are initially U-shaped and then are formed as a helical structure. Thus, the bands 18, 22 cannot lie parallel to a central axis.

Also, in Umeki, the coils 5a, 5b are not parallel to a rotor axis as the coils are bent at several angles. See angle Yf, shown in Figure 1A.

Claims 5 and 6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Graham and Umeki and further in view of Hsu. For the reasons set forth above, there is no motivation or suggestion to modify Graham with Umeki. Further, even assuming that there is sufficient motivation to make the modification, the references taken together do not disclose, suggest, or teach the features set forth in the claims. The Hsu reference does not make up for the deficiencies of Graham and Umeki. Thus, for the reasons discussed above in relation to claims 1-4, claims 5 and 6 are also allowable.

For the reasons set forth above, all claims should be allowed. An indication of such is requested. Applicant believes that no additional fees are required, however, the Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

Respectfully submitted,

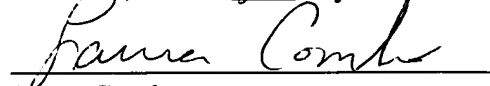


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Dated: October 22, 2003

CERTIFICATE OF MAIL

I hereby certify that the enclosed Response is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 22 day of October, 2003.



Laura Combs

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